

63-7625

17 October 1963

Dr. Jerome B. Wiesner
Director, Office of Science and Technology
Executive Office of the President
Washington, D. C.

Dear Dr. Wiesner:

During the course of a recent review of programs in support of intelligence objectives, three problems in the field of non-numerical automatic data processing which we believe to be especially critical have been noted. These are:

- (1) The conversion of text on hard copy into text which can be read by machines;
- (2) The development of massive memories to which access may be had at random; and,
- (3) Devising advanced techniques for processing information.

These problems, which are already the object of extensive support by both private industry and the Government, transcend the field of intelligence. Moreover, it does not appear that additional financial support will suffice because research talent of the caliber needed to get results is in short supply.

Your views on what might be done -- and on how we of the intelligence community could help -- would be appreciated.

Inasmuch as they both have a keen interest in these matters, I am sending copies of this letter to Dr. Leland J. Haworth, Director, National Science Foundation, and Dr. Harold Brown, Director, Defense Research and Engineering.

MORI/CDF Pages 1, 2 & 5 thru

Faithfully yours,

(Signed) Marshall S. Carter

Marshall S. Carter
Lieutenant General, USA
Deputy Director

White House

AD/CR:PA Borek:jec (7 Oct 63)

Rewritten for minor changes and signature element:

DDCI:MSCarter:bec (17 Oct 63)

Distribution:

String & 1 - Adae

1 - Dr. Haworth

I - Dr. Brown

1 - DDCI

~~1 - ER (via Exec Dir)~~

1 - DD/SAT

l-Inspector General

-1- AD/CR

I - AD/CS/DD/S&T

2 - QAD/CR

Original version concurred in by [redacted] for Dr. Albert D. Wheeler.

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Dr. Jerome B. Wiesner
Director, Office of Science and Technology
Executive Office of the President
Washington, D. C.

Dear Dr. Wiesner:

During the course of a recent review of programs in support of intelligence objectives, the members of the Intelligence Board identified three problems in the field of non-numerical automatic data processing which we believe to be especially critical. These are:

- (1) The conversion of text on hard copy into text which can be read by machines;
- (2) The development of massive memories to which access may be had at random; and,
- (3) Devising advanced techniques for processing information.

These problems, which are already the object of extensive support by both private industry and the Government, transcend the field of intelligence. Moreover, we are faced with a situation where additional financial support will not suffice because research talent of the caliber needed to get results is in short supply.

I cannot believe, however, that we are doing all we can to get more concerted action or faster results. Your views on what might be done - and on how we could help - would be appreciated.

Inasmuch as they both have a keen interest in these matters, I am sending copies of this letter to Dr. Haworth and Dr. Brown.

Sincerely,

John A. McCone
Director

cc: Dr. Eland J. Haworth
Director, National Science Foundation

Dr. Harold Brown
Director, Defense Research and Engineering

Distribution:

Orig. & 1 - Addressee

1 - Dr. Haworth

1 - Dr. Brown

1 - DD/S&T

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1 - Inspector General

1 - AD/CR

2 - OAD/CR

1 - ER

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16 September 1963

**EXCERPT FROM DCI REPORT OF
ASSESSMENT OF PROGRAMS AND PLANS
SUPPORTING INTELLIGENCE OBJECTIVES***

III. AUTOMATIC DATA PROCESSING

Objective

"That research be intensified to determine the usefulness of data processing techniques, including mechanized title or summary sentence permutation, to facilitate review and assessment of the great volume of material that must be dealt with in the intelligence community."

Response

1. The pursuit of this objective is one of our most demanding tasks, affecting as it does our ability to achieve other of the objectives. It has high priority and we intend to continue to expand present programs to assist the intelligence analysts to effectively use the voluminous information that must be handled. While the computer has definite limitations, its capability to store, process, and deliver increasingly sophisticated correlations of subjects, titles, names, date and time sequences, commodities, and the like is well established. We have, therefore, been steadily increasing the uses of equipment, by which means we can extend the capabilities of the

* Transmitted by DCI to Special Assistant to the President for National Security Affairs under cover of memorandum dated 9 September 1963, TS-Codeword document [redacted]

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individual analyst.

2. USIB has for the past year been conducting a study of the community's information processing systems in an effort to improve and make compatible the handling of information among the several agencies. This study, plus further detailed investigations, will provide the community with essential information concerning the objectives, capabilities and common problems of intelligence information processing systems, which is now lacking. Research in this field continues at a very high level.

3. Examples of encouraging progress are:

a. CIA's WALNUT system, a unique, internally-conceived project, searches biographic intelligence files against names or other biographic data and retrieves and reproduces pertinent documents automatically, reducing the time taken to conduct a name search from days to hours and reducing both the flow of paper and space needed for storage.

b. NSA has been conducting experiments in capturing titles of reports automatically and preparing permuted word indexes (i.e., indexes that may be searched upon any word in the title.)

c. Similar experiments are being conducted by the Air Force in its Foreign Technology Division and at SAC and NORAD.

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d. An operational system based on this principle is in prospect on a limited scale in the DIA Current Intelligence and Indications Center.

e. The Department of State is developing a pilot system covering Cuban affairs based on a computer and designed to produce permuted subject indexes for the analyst.

f. In NPIC, a computer-supported system brings all pertinent data on each target (what is known and what is needed) to the elbow of the photo-interpreter as he examines new photography.

4. The Director of Central Intelligence and the members of USIB are very much concerned over the security aspects of rapid expansion of automatic data processing techniques in the handling of intelligence information. Such techniques permit easy and indiscriminate reproduction and distribution of sensitive intelligence, which could quickly lead to degrading its security. The hazard is somewhat reduced by storing only minimum index data in the computer and keeping the documents themselves in controlled files. Additional security is gained by strictly compartmenting the machines and persons handling specially sensitive material.

5. Our problems have largely to do with the processing of language, while automatic equipment is essentially designed to handle numbers. The availability of first-rate researchers in automatic language processing is

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very limited. We have a considerable capability in this field and have taken steps to acquire additional in-house expertise in language processing, but it will be some time before the full effect is felt. Equipment manufacturers are being encouraged to assist.

6. The most significant problem in the present period is that of organization. When the magnitude of the automatic data processing problem is considered, with the near certainty that it will continue to grow, collective efforts within the community will become increasingly important and will call for a coordinated effort under the general guidance of USIB. Therefore, the USIB will:

a. Consider the feasibility of establishing a national service of common concern to centrally index all documents now being processed on a decentralized basis. The index data so developed would be available to all of the members of the community.

b. Consider organizing a small permanent group of technical experts from within the community whose sole responsibility would be to concentrate on technical information processing problems in the community.

7. The USIB further will undertake to accelerate external research in perfecting the art of processing language automatically. Extensive research has been supported in this field for nearly a decade. This will continue and

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the support of the Office of Science and Technology and the National Science

Foundation, which has been solicited, should materially assist our efforts.

To assure positive results, insofar as possible, with this extraordinarily difficult problem, the community has formed a Joint Advisory Group on Automatic Language Processing to coordinate Government-supported research in this field.*

* Comment of Director INR/State

III - Automatic Data Processing

This Section . . . directs attention to the fact that the Department of State is developing a pilot system covering Cuban affairs based on a computer and designed to produce permuted subject indexes. Actually, it is designed to produce these permuted subject indexes, document abstracts and extracts, and political and economic facts as well.

Within the Department, three distinct but interrelated levels of authority will be served: 1) the desk officer and office director level; 2) the Coordinator of Cuban Affairs and the Assistant Secretary for Inter-American Affairs; and 3) the principal officers of the Department, including the Secretary, during periods of crises. This effort should be regarded as an operational prototype system which will be expanded after the end products have been evaluated on a trial-and-error basis by the various levels of information users.

While the lack of funds and lack of time to consolidate the results of experience are not currently pressing problems to the community at large, they are serious problems for State. Doubt exists at the moment as to Congressional approval of this project's line item in the FY 1964 Department budget, which already has been reduced from \$663,000 to \$250,000.

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In addition to those problems of interagency organization and research personnel shortage which are mentioned in the basic report, I would also like to mention the high cost of data inputs. The processing of intelligence in preparation for input to a computer system is presently accomplished by people. Depending upon the system requirements, these persons index, abstract, and/or extract documents. The result is a high cost product which is generally usable in only that agency or department of government for which the computer system was designed.

Within the next five years we foresee technical advances which will drastically reduce these costs. These improvements should occur in the areas of: 1) the use of digital computers to index and abstract automatically electrical communications traffic; 2) improvements in character recognition devices and the development of page reading equipment; and 3) source data automation sub-systems. During the intervening period of from three to five years, the challenge is one of increasing the standardization and general compatibility of our intelligence processing and storage and retrieval systems in the several agencies.

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